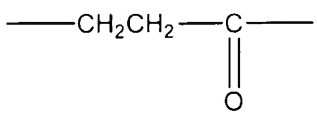
## REMARKS

In response to the Office Action of March 27, 2003, non-elected claims 1-6 and 20-23 have been cancelled to advance the prosecution of the application. Withdrawn claims 16-19 have been retained so the Examiner can consider rejoining them after the examined claims are allowed in accordance with M.P.E.P. §821.04.

Applicants' invention relates to a novel polyketone solution of a polyketone containing a ketone unit represented by the following formula (1) as a main repeating unit and having a molecular weight distribution of 1-6 and a Pd content of not more than 50 ppm



. . . (1)

and a solvent for dissolving the polyketone.

The novel feature of the polyketone solution as set forth in main claim 7 is that it has a phase separation temperature in the range of 0-150°C.

In the Office Action, the Examiner rejected claims 7-10 under 35 U.S.C. § 102(b) for being anticipated by or under 35 U.S.C. § 103(a) for being obvious over JP 2000345431 (hereafter JP'431) corresponding to Chem. Abstract 134:18440 and claims 11-15 under 35 U.S.C. § 103(a) for being obvious over JP'431 in view of EP 1116 752 (hereafter EP'752) corresponding to Chem. Abstract 132:167161.

The inventors surprisingly found that a polyketone fiber having a uniform inner structure can be produced from a polyketone solution having the claimed phase separation temperature in the specific range by phase separation spinning (See page 15, lines 1-14 of the specification). Specifically, a polyketone solution that is

mono-phasic at higher temperatures, but bi-phasic at lower temperatures is extruded at a temperature above the phase separation temperature into a coagulation solution having a temperature below the phase separation temperature. The polyketone solution is then rapidly cooled and forms a uniform structure before the solvent diffuses out of the fiber (See Appendix 1, upper illustration). The fiber obtained has a uniform inner structure, as shown in the upper electron micrograph in Appendix 1.

On the other hand, conventional polyketone fibers, such as those disclosed in JP'431 and EP'752, are produced by conventional wet spinning, where the solvent diffuses out preferentially from the surface layer to coagulate the surface first (Appendix 1, lower illustration). The fibers thus-produced inevitably have a skin-core structure where the surface portion is dense and the central portion is less so. (See the lower electron micrograph in Appendix 1).

The fatigue strength of polyketone fibers produced by conventional wet spinning is so low that these fibers cannot be used in applications where high fatigue strength is required. For example, fibers for industrial material, particularly a reinforcing fiber including a tire cord or a belt.

On the other hand, the polyketone solution of the present invention has made it possible to produce polyketone fibers having a uniform structure (Appendix 1, upper micrograph) and high fatigue strength and thus can be used in applications where high fatigue strength is required.

In alleging that the polyketone solutions of claims 7-10 are anticipated by or obvious over JP'431, the Examiner takes the position that the structure of the polyketone and Pd content recited in claim 7 are disclosed in JP'431, though the

formula (I) itself is not explicitly disclosed. However, what the Examiner has ignored in making the rejections is the claimed phase separation temperature range.

JP'431 discloses a wide variety of aqueous metal salt solutions with various metal salt compositions (i.e., species of metal salts and weight ratio of the metal salts), into which a polyketone can be dissolved. However, JP'431 only relates to a polyketone with low metal content. In fact, the two inventors of JP'431 are two of the three joint inventors of the present invention and, consequently, they are well aware of the teachings of this reference. The metal salt compositions (i.e. metal salt species and their weight ratio) in the aqueous metal salt solutions in JP'431 are simply selected based on the criteria of whether a solution can dissolve polyketone or not. It is of no concern whether the polyketone solution has a phase separation temperature or not in a specific range, because the polyketone solution of JP'431 is to be spun into a fiber by conventional wet spinning. JP'431 therefore, makes no mention of the phase separation temperature of the disclosed polyketone solution. Nor does it describe or suggest that the phase separation temperature of the polyketone solution can be controlled to be within a specific range by changing the metal salt composition of the solution.

On the other hand, the present inventors found that a polyketone solution with a specific phase separation temperature can be prepared by comprehensively adjusting the chemical structure (monomer composition) and the intrinsic viscosity of the starting polyketone, the kind and the concentration of the metal salt added to the solvent for dissolving the starting polyketone, the kind of the solvents for dissolving the starting polyketone and the metal salt, the concentration of the starting polyketone, etc" (See the

paragraph from page 27, line 24 to page 28, line 4 of the specification). Consequently, the polyketone solution of JP'431 could not inherently have the claimed phase separation temperature range.

Even if JP'431 does disclose a wide variety of aqueous polyketone solutions having various polyketone concentrations and various metal salt compositions, the references still does not specifically disclose a polyketone solution having the phase separation temperature in the specific range recited in claim 7. The invention according to claim 7, and the claims dependent therefrom, therefore cannot be considered anticipated by JP' 431.

In addition, JP'431 fails to describe or suggest how to make a solution with such a polyketone phase separation temperature in the specific range recited in claim 7 or the polyketone fiber with a uniform structure (with high fatigue strength).

Polyketone solutions having the specific phase separation temperature according to claims 7-10 are, therefore, not obvious over JP'431 either.

As noted above, JP'431 fails to disclose or suggest a polyketone solution having the claimed specific phase separation temperature and EP'752 does not disclose or suggest this feature either.

The disclosure of EP'752, two of the inventors of which are inventors of the present application, relates to certain aqueous solutions that can be used as a solvent for a polyketone instead of the organic solvents used in conventional polyketone solutions. It does not describe or suggest an aqueous solution having a specific phase separation temperature or any method for producing such a solution.

In Comparative Example I in the present application, a polyketone solution corresponding to that described in Example 17 in EP'752, i.e. a polyketone solution consisting of a metal salt solution of $ZnC1_2/CaC1_2/H_2O$=65/10/25 (weight ratio of metal salts $ZnC1_2/CaC1_2$=86.7/13.3) and polyketone, is prepared. The polyketone solution was found to have no phase separation temperature (see page 60, lines 24-27 of the specification) and the polyketone fiber obtained therefrom was found to have a skin—core structure and, thus, a significantly low fatigue resistance (as indicated by a low strength retention rate, namely 48%). See page 61, lines 3-8 and Table 2 of the present specification.

On the other hand, the inventions of claims 11-15 are directed to preferred embodiments of the polyketone solutions of the present invention, where preferred metal salt compositions for preparing the polyketone solution with a specific phase separation temperature range are recited.

As required by M.P.E.P. §2143, to establish a prima facie case of obviousness the cited references must at least in combination teach or suggest all of the claimed limitations. While EP'752 may disclose various aqueous solutions similar to those of claims 11-15, as discussed above, it fails to disclose the claimed phase separation temperature range missing from JP'431. Accordingly, it is submitted that claims 11-15 cannot be considered obvious over JP'431 in view of EP'752.

The advantages of polyketone fibers having a uniform inner structure obtained from the solutions of the present invention, such as high fatigue resistance (strength retention rate), are shown in Table 1 in the specification. These advantages further support the unobviousness of the claimed polyketone solutions.

It is believed claims 7-15 are now in condition for allowance and such action by the Examiner is therefore requested.

If claims 7-15 are allowable, it is also requested that the Examiner rejoin claims 16-19, all dependent directly or indirectly from claim 7, as permitted by M.P.E.P. §821.04 and allow these claims also. As noted therein "when a product claim is found allowable, applicant may present claims directed to the process of making and/or using the patentable product." Since claims 16-19 are directed to a process for using the product of claim 7 and include all the limitations of claim 7, it is submitted that they are entitled to be rejoined in this case.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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**Attachments:** **Appendix 1**

Comparison between the wet spinning with the polyketone solution of the present invention (phase separation spinning) and the conventional spinning (non-phase separation method)

*Appendix 1*